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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,177

02/03/2006

Erlind M. Thorsteinson

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10/15/2008

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EXAMINER

MICALI, JOSEPH

ART UNIT

PAPER NUMBER

4181

MAIL DATE

DELIVERY MODE

10/15/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,177	<b>Applicant(s)</b> THORSTEINSON, ERLIND M.	
	<b>Examiner</b> JOSEPH V. MICALI	<b>Art Unit</b> 4181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 11-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-52 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/5/07, 7/30/07, 4/17/07, 6/19/07</u> .                      | 6) <input type="checkbox"/> Other: _____                          |



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## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Groups I, claim(s) 1-10, drawn to method of preparing a catalyst and modified carrier to be used for the vapor epoxidation of alkene.

Group II, claim(s) 11-12, drawn to a modified carrier for a catalyst to be used for the vapor phase epoxidation of alkene.

Group III, claim(s) 13-15, drawn to a catalyst to be used for the vapor phase epoxidation of alkene.

Group IV, claim(s) 16-35 and 37-52, drawn to a method for the epoxidation of an olefin.

Group V, claim(s) 36, drawn to a method for producing 1,2-diol, a 1,2-diol ether or an alkanolamine.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Lack of unity of invention may be directly evident “a priori,” that is, before considering the claims in relation to any prior art, or may only become apparent “a posteriori,” that is, after

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taking the prior art into consideration. For example, independent claims to A + X, A + Y, X + Y can be said to lack unity a priori as there is no subject matter common to all claims. In the case of independent claims to A + X and A + Y, unity of invention (i.e. species) is present a priori as A is common to both claims.

In the instant, there is no common element among the five inventions; hence, a priori case. They are all distinctly separated in order of the three different processes. Group I contains the steps to make a catalyst and carrier. Group II and III are a catalyst and carrier. Group IV contains the steps to epoxidize an olefin using a catalyst and carrier. Finally, Group V contains the process for producing 1,2-diol or the like using an olefin oxide made by epoxidation. The five inventions run consecutively, one after another, but they are disconnected. For example, there is no common subject matter if one compares the methods of Group I and Group V, or even Group I and Group IV. Therefore, the inventions lack unity and properly subjected to restriction requirement.

2. During a telephone conversation with Lois K. Ruszala on September 10<sup>th</sup>, 2008, a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-52 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Rejoining Practice***

3. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of

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the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

### ***Status of Application***

Claims 1-52 are pending. The non-elected claims 11-52 have been withdrawn in lieu of an oral election of the Group I invention. Thus, Group I, the elected claims 1-10, are presented for examination.

***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because of the usage of "said". Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1-3 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,874,739 by Boxhoorn.**

Boxhoorn teaches a process for the preparation of a silver-containing catalyst suitable for the oxidation of ethylene to ethylene oxide.

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With respect to claim 1, Boxhoorn teaches a step of impregnating a preformed alpha-alumina carrier (**claim 1 and claim 25**), which has been subjected to calcining and, optionally, other preforming treatments, as part of the preforming process (**claim 1 and column 2, lines 44-66**), with at least one alkali metal hydroxide modifier (**claim 3**). Boxhoorn teaches an optional step of drying the impregnated carrier (**column 4, lines 16-20**). Boxhoorn teaches a step of calcining the impregnated and optionally dried carrier (**claim 1, column 2, lines 44-66, and column 4, lines 20-39**). Boxhoorn teaches a step of washing the calcined carrier (**column 5, lines 8-11 and lines 30-35**).

With respect to claim 2, Boxhoorn teaches a step of depositing silver catalytic material on the calcined carrier (**claim 1**).

With respect to claim 3, Boxhoorn teaches a method wherein calcining is carried out a temperature of 800° C to 1800° C (**claims 11-12**).

With respect to claim 5, Boxhoorn teaches a method wherein the alpha-alumina carrier is prepared by contacting boehmite alumina and/or gamma-alumina with an acidic mixture containing halide anions and water (**claim 2 and column 1, line 54 - column 2, line 2**).

With respect to claim 6 and 7, Boxhoorn teaches a method wherein at least one efficiency enhancing promoter is deposited on the preformed alpha-alumina carrier, with the promoter comprising a rhenium-containing compound (**claim 1 and column 3, lines 42-48**).

With respect to claim 8, Boxhoorn teaches a method wherein said alkene is ethylene (**claim 1**).



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With respect to claim 9, Boxhoorn teaches a method wherein the alkali metal hydroxide is present in an amount from 0.01 to 5.0 weight percent, based on the total weight of the modified alumina carrier (**claim 15**).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,874,739 by Boxhoorn, as applied to claim 1 or 2 above, in view of US Patent No. 4,994,589 by Notermann.**

Boxhoorn teaches a process for the preparation of a silver-containing catalyst suitable for the oxidation of ethylene to ethylene oxide. Boxhoorn teaches an extrusion of the alumina mixture in the form of shaped carrier particles (**claim 22**), specifically the shaped alpha-alumina particles comprise bars, rings, pellets, tablets and triangles (**column 3, lines 5-9**).

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Boxhoorn, however, does not teach the shaped alpha-alumina carrier having a morphology comprising interlocking platelets.

Notermann teaches a process for epoxidation of an alkene including a supported silver catalyst. Specifically, the support consists essentially of alpha-alumina and the support particles have platelet-type morphology (**claim 1**). These platelets are shown to be interlocking (**Figure 1 as well as column 13, lines 8-14**). Both Boxhoorn and Notermann teach a silver-containing catalyst on an alpha-alumina carrier support and different types of morphologies the carrier could take.

At the time of invention it would have been obvious to a person having ordinary skill in the art to modify the product of Boxhoorn by including an interlocking platelet morphology in view of the teaching of Notermann. The suggestion or motivation for doing so would have been to improve crush strength, pore volumes, and surface areas, thereby providing high performance characteristics of short term stability or high activity and long term stability (**Notermann, column 13, lines 17-22**).

**Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,874,739 by Boxhoorn.**

Boxhoorn's teaching is mentioned in 102 rejection(supra)

With respect to claim 10, Boxhoorn teaches the use of an alkali metal hydroxide modifier ( see **claim 3**). The patented disclosure of Boxhoorn list various alkali metal compounds such as potassium, rubidium, and cesium, see column 1, lines 66-67. In view of applicant's own admission(at page 10, lines 1-2), the instant invention can be utilized by a modifier selected from among alkali metal hydroxides including sodium hydroxide. Therefore, the minute difference is

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considered to be minor variation, which does not render the claim 10 patentably distinct over the prior art of the record. One would have been motivated to substitute potassium or cesium hydroxide with sodium hydroxide because sodium hydroxide is easy to obtain since it is most common alkali metal available in market place, and thus, increase industrial applicability and reduces manufacturing cost.

### ***Conclusion***

11. Claims 1-10 are not allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH V. MICALI whose telephone number is (571)270-5906. The examiner can normally be reached on Monday through Friday, 7:30am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, VICKIE KIM can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.M./

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/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4181